

REMARKS

This is intended as a full and complete response to the Office Action dated December 15, 2006, having a shortened statutory period for response set to expire on March 15, 2007. Please reconsider the claims pending in the application for reasons discussed below.

Claims 1-13, 15, 16, 19-34 and 37 were pending in the application and rejected by the Examiner. By way of this reply, independent claims 1, 15, 16, 19, 28, 32, and 37 have been amended to incorporate the limitations of claims 3 and 34 which have been cancelled. Therefore, claims 1-2, 4-13, 15, 16, 19-33 and 37 are now pending for further examination.

Claim 13 stands rejected under 35 U.S.C. 112. Claim 13 has also been amended to respond to the rejection under 35 U.S.C. 112, and withdrawal of the rejection is respectfully requested.

Claims 1, 2, 4-7, 9-13, 16, 19, 20, 26, 27 and 32-37 stand rejected under 35 USC § 102(a) as anticipated by *Rubino, et al.* (U.S. Patent No. 5,527,215). Claim 3 stands rejected under 35 USC § 103(a) as being unpatentable over *Rubino, et al.* in view of *Osterheld, et al.* (US Patent No. 5,921,855). Claims 23 and 24 stand rejected under 35 USC § 103(a) as being unpatentable over *Rubino, et al.* in view of *Beardsley, et al.* (US Patent No. 6,299,515). Claims 21, 22, 25 and 29 were rejected under 35 USC § 103(a) as being unpatentable over *Meikle, et al.* (US Patent No. 5,698,455) in view of *Beardsley, et al.* and further in view of *Okamura, et al.* (US Patent No. 6,332,830). These rejections are respectfully traversed.

Regarding claims 3 and 34, *Osterheld et al.* (US Patent No. 5,921,855) does not mention in either the specification or claims a groove wherein the depth of the groove changes along the length of the groove. A range for groove depth is provided (Col. 6, lines 28-30), but there is no mention of changing groove depth along the length of a groove. A "pitch" is mentioned in *Osterheld et al.*, but is defined as the radial distance between adjacent grooves (Col. 5, lines 25-30).

Therefore, the combination of *Rubino, et al.* with the other references of record does not teach, show, or suggest an apparatus, comprising a semiconductor polishing

device having a first surface defining at least two non-intersecting fluid retaining grooves at least a portion of which is oriented at an angle relative to a radial line originating at a center of the semiconductor polishing device, wherein the non-intersecting fluid retaining grooves are adapted to flow a fluid inwardly toward a center portion of the semiconductor polishing device, and wherein a depth of at least one of the non-intersecting fluid retaining grooves changes along a length of the at least one non-intersecting fluid retaining groove, as recited in claim 1 as amended, and claims dependent thereon.

Also, the combination of *Rubino, et al.* with the other references of record does not teach, show, or suggest a substrate polishing pad, comprising: (a) a polishing surface on a first side of the substrate polishing pad; and (b) a mounting surface on a second side of the substrate polishing pad, wherein at least one of the polishing surface and the mounting surface has a plurality of non-intersecting fluid retaining grooves formed therein, wherein the grooves are disposed so that upon a given direction of movement of the substrate polishing pad a fluid disposed in the grooves is urged to flow from an outer portion toward a center portion of the substrate polishing pad, wherein the one or more fluid retaining grooves extend from the center portion of the substrate polishing pad to an edge of the substrate polishing pad, and wherein no point of the grooves is tangent to a radial line extending from a center to the substrate polishing pad, and wherein a depth of at least one of the non-intersecting fluid retaining grooves changes along a length of the at least one non-intersecting fluid retaining groove, as recited in claim 15 as amended.

Also, the combination of *Rubino, et al.* with the other references of record does not teach, show, or suggest a substrate polishing pad, comprising: (a) a polishing surface on a first side of the substrate polishing pad; and (b) a mounting surface on a second side of the substrate polishing pad, wherein at least one of the polishing surface and the mounting surface has a plurality of non-intersecting fluid retaining grooves formed therein, wherein the grooves are disposed so that upon a given direction of movement of the substrate polishing pad a fluid disposed in the grooves is urged to flow from an outer portion toward a center portion of the substrate polishing pad, and wherein the grooves are formed on the mounting surface and the substrate

polishing pad comprises perforations extending between the polishing surface and the mounting surface, and wherein a depth of at least one of the non-intersecting fluid retaining grooves changes along a length of the at least one non-intersecting fluid retaining groove, as recited in claim 16 as amended.

Also, the combination of *Rubino, et al.* with the other references of record does not teach, show, or suggest an apparatus for polishing a substrate, comprising: (a) one or more rotatable platens; (b) a motor coupled to the rotatable platens; (c) one or more polishing heads rotatably mounted in facing relation to the rotatable platens; and (d) a polishing pad disposed on each of the rotatable platens, wherein at least one of the rotatable platens and the polishing pads comprise a plurality of non-intersecting fluid retaining grooves formed on a first surface thereof and wherein at least a portion of the grooves are disposed at an angle to a radial line extending from a center of the first surface and are adapted to flow a fluid inwardly from an outer portion to a center portion of the first surface, and wherein a depth of at least one of the non-intersecting fluid retaining grooves changes along a length of the at least one non-intersecting fluid retaining groove, as recited in claim 19 as amended, and claims dependent thereon.

Also, the combination of *Rubino, et al.* with the other references of record does not teach, show, or suggest a rotatable platen for a polishing system, comprising a patterned pad mounting surface forming a plurality of non-intersecting fluid retaining grooves each having a portion oriented at an angle relative to a radial line originating at a center of the pad, the portion adapted to flow a fluid inwardly from a perimeter portion to a center portion of the platen during rotation of the platen, and wherein a depth of at least one of the non-intersecting fluid retaining grooves changes along a length of the at least one non-intersecting fluid retaining groove, as recited in claim 28 as amended, and claims dependent thereon.

Also, the combination of *Rubino, et al.* with the other references of record does not teach, show, or suggest an apparatus, comprising a semiconductor polishing device having a first surface defining at least one non-intersecting fluid retaining groove at least a portion of which is oriented at an angle relative to a radial line originating at a center of the semiconductor polishing device, and wherein the non-intersecting fluid retaining groove has a first portion and a second portion having a

same direction of curvature and defining a tangent point to the radial line and wherein the non-intersecting fluid retaining groove is adapted to flow a fluid inwardly toward a center portion of the semiconductor polishing device, and wherein a depth of the non-intersecting fluid retaining groove changes along a length of the non-intersecting fluid retaining groove, as recited in claim 32 as amended, and claims dependent thereon.

Also, the combination of *Rubino, et al.* with the other references of record does not teach, show, or suggest an apparatus for polishing a substrate, comprising: (a) a rotatable platen; (b) a motor coupled to the rotatable platen; (c) a polishing head rotatably mounted in facing relation to the rotatable platen; and (d) a polishing pad disposed on the rotatable platen, wherein a plurality of non-intersecting slurry retaining grooves are formed at an interface between the polishing pad and the rotatable platen and wherein a first portion of the grooves are oriented to flow slurry inwardly from an outer region to an interior region at the interface between the polishing pad and the respective rotatable platens for a given direction of rotation of the platen, and wherein a second portion of the grooves are oriented to flow slurry outwardly from a central region to the interior region at the interface between the polishing pad and the rotatable platen for the given direction of rotation of the platen, and wherein a depth of at least one of the non-intersecting fluid retaining grooves changes along a length of the at least one non-intersecting fluid retaining groove, as recited in claim 37 as amended.

Having addressed all issues set out in the office action, Applicant respectfully submits that the claims are in condition for allowance and respectfully request that the claims be allowed.

The Applicant submits that the claims are in condition for allowance and respectfully requests that the claims be allowed.

Respectfully submitted,



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